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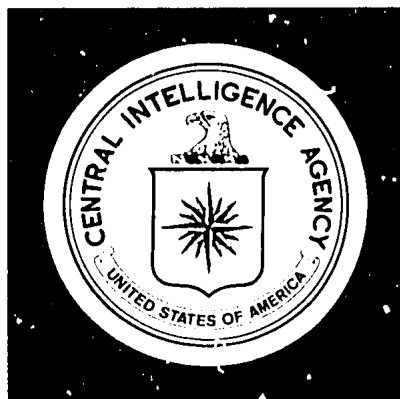
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DIRECTORATE OF  
INTELLIGENCE

# Intelligence Memorandum

*North Vietnam: Petroleum Developments in 1972*

**Secret**

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February 1973

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CENTRAL INTELLIGENCE AGENCY  
Directorate of Intelligence  
February 1973

INTELLIGENCE MEMORANDUM

NORTH VIETNAM: PETROLEUM DEVELOPMENTS IN 1972

SUMMARY

1. Despite large-scale US bombing beginning in April and the mining of North Vietnamese ports in May, petroleum imports reached at least 390,000 metric tons in 1972, close to the record high set a year earlier. The mining and bombing, however, resulted in increased consumption by North Vietnam's transport sectors, and this caused year-end stocks to fall to their lowest level in recent years.

2. While the bombing severely damaged storage terminals, especially in Hanoi and Haiphong, and dispersed storage sites were struck repeatedly, the North Vietnamese nevertheless managed to construct sufficient new sites so that total storage capacity at the end of the year was adequate to meet the country's needs.

3. The pipeline system was expanded considerably and connected to a petroleum storage area and rail center at P'ing-hsiang in the People's Republic of China (PRC). As a result of this and other pipeline construction, oil from the PRC was being distributed throughout North Vietnam and into Laos and South Vietnam by the end of the year.

Note: This memorandum was prepared by the Office of Economic Research. Questions and comments on this Intelligence Memorandum are welcome.

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# DISCUSSION

## Imports

4. North Vietnam imported at least 390,000 tons of petroleum products in 1972 (see Table 1) and may have approximated the 1971 record of 406,000 tons. Monthly deliveries, which normally vary considerably, were particularly erratic last year (see the chart). While imports during January and February set new records, they declined sharply in March, April, and

Table 1

### North Vietnam: Estimated Monthly Imports of Petroleum Products, by Type of Carrier<sup>a</sup>

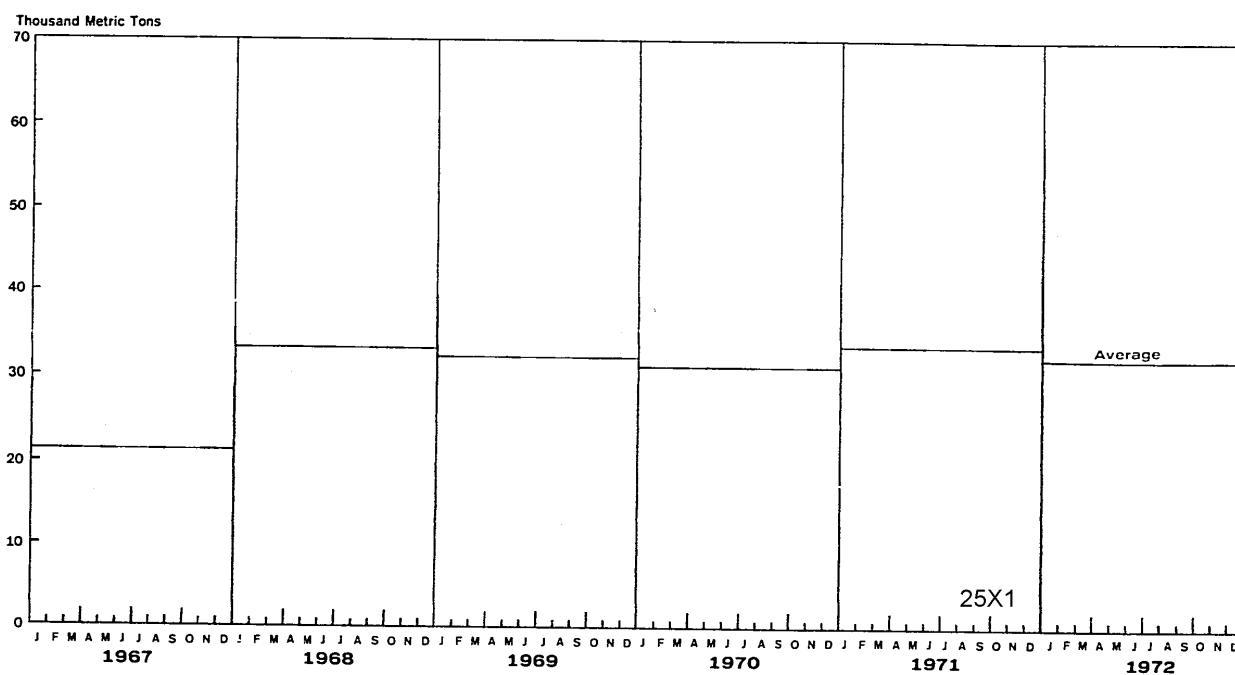
1972

	<i>Thousand Metric Tons</i>			
	<i>Tanker</i>	<i>Cargo Vessel</i>	<i>Rail</i>	<i>Total</i>
<b>Total</b>	<b>365.7</b>	<b>8.5</b>	<b>14.1</b>	<b>388.3</b>
Pre-mining	162.2	4.0	0.3	166.5
January	58.0	....	....	58.0
February	61.0	0.03	....	61.3
March	30.5	3.0	....	33.5
April	12.0	0.7	0.3	13.0
1-10 May	0.7	....	....	0.7
Post-mining	203.5	4.5	13.8	221.8
11-31 May	3.7	0.2	0.2	4.1
June	....	....	0.1	0.1
July	3.4	1.6	3.0	8.0
August	32.3	0.6	0.8	33.7
September	59.2	1.6	2.6	63.4
October	24.2	....	2.4	26.6
November	56.9	....	1.9	58.8
December	23.8	0.5	2.8	27.1

a. Seaborne deliveries of petroleum from the USSR and Eastern Europe to the PRC after the mining of North Vietnamese ports are treated as seaborne deliveries to North Vietnam. Rail delivery figures reflect identified shipments from the USSR, Eastern Europe, and China to North Vietnam and are based on very incomplete data. No estimate is made of rail or road deliveries of Chinese petroleum during the May-December period.

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# NORTH VIETNAM: Imports of Petroleum, by Month



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early May, probably because stock levels were close to capacity and because US bombing, which was expanded in April, was extended to include most of the country's important petroleum storage facilities. In early May, North Vietnam's major ports were mined, and direct seaborne petroleum deliveries were stopped for the rest of the year.

5. For almost three months -- from 9 May through July -- petroleum deliveries were sharply reduced. One small Soviet tanker, which had arrived in Haiphong prior to the mining program, suffered damage during a US air attack and failed to discharge its cargo. Between the time the mines were seeded and activated, the ship left North Vietnamese waters for a PRC port where it was repaired and its cargo unloaded. During this period, two East European cargo vessels carrying petroleum products for North Vietnam also discharged their cargoes in PRC ports. We assume that this petroleum eventually reached North Vietnam. In addition, it is almost certain that the PRC shipped some of its own petroleum products to North Vietnam by rail and road during these same months.

6. In late July the USSR began an unprecedented petroleum delivery program to PRC ports.\* These deliveries, which averaged about 40,000 tons monthly through December, probably met North Vietnam's normal consumption requirements as well as allowing some stock buildup. The evidence suggests that all such petroleum deliveries after the bombing program began were for North Vietnam.

7. The USSR supplied 95% of the seaborne petroleum deliveries in 1972, compared with 93% a year earlier. Most shipments originated in the Soviet Far East; the remainder came from Black Sea ports (see Table 2). Virtually all Soviet seaborne deliveries to PRC ports after the mining of North Vietnam's ports were from the Soviet Far East.

8. Eastern Europe supplied 5,000 tons of petroleum products -- primarily lubricants -- in 1972. They also rerouted their seaborne deliveries to PRC ports after the mining. About 4,400 tons, or 88% of East European petroleum shipments, were subsequently diverted to PRC ports.

9. The PRC delivered 14,000 tons of petroleum to North Vietnam by sea before the mining. Additional petroleum was probably shipped via rail and road routes, particularly during the interval between the mining in May and the inauguration of full-scale petroleum deliveries to PRC ports from the Soviet Union. Data are not available, however, to allow estimation of the size of such deliveries.

\* In 1967 and early 1968, when Haiphong was unable to handle the volume of seaborne petroleum deliveries, several large Soviet tankers offloaded at PRC ports. The PRC made offsetting deliveries to North Vietnam in small tankers whose cargoes could be accepted at Haiphong without serious delay.

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Table 2

**North Vietnam: Estimated Seaborne Imports  
of Petroleum Products  
1972**

<i>Thousand Metric Tons</i>				
<i>Origin</i>	<i>Tanker<sup>a</sup></i>	<i>Cargo Vessel</i>	<i>Total</i>	<i>Percent of Total</i>
<b>Total</b>	<b>365.7</b>	<b>8.5</b>	<b>374.2</b>	<b>100</b>
USSR	351.7	3.5	355.2	95
Black Sea	39.7	1.0	40.6	11
Far East	312.0	2.5	314.5	84
PRC	14.0	....	14.0	4
Eastern Europe	....	5.0 <sup>b</sup>	5.0	1

a. All tanker deliveries after the mining of North Vietnam's harbors on 12 May were made from the Soviet Far East by Soviet ships to PRC ports and are treated as seaborne deliveries to North Vietnam.

b. Eastern Europe delivered 4,400 tons of petroleum products on dry cargo ships to the PRC for delivery to North Vietnam after the 12 May mining of North Vietnam's harbors.

10. There were 14,100 tons of identified railborne petroleum deliveries to North Vietnam in 1972. This excludes petroleum delivered to PRC ports and transshipped by rail to North Vietnam. Almost all deliveries were made after the mining of North Vietnam's ports. All of the identified rail shipments were packaged specialty products -- 13,200 tons from the Soviet Union, 800 tons from Hungary, and 100 tons from the PRC.

### Consumption

11. A record 410,000 tons of petroleum products probably were consumed by North Vietnam in 1972 (see Table 3) -- continuing the upward trend initiated in 1966. An additional but unknown quantity of petroleum was destroyed by US bombing. In recent years, petroleum consumption in North Vietnam has been almost 1,100 tons per day. The high import levels early in 1972 and the intense logistical activity in preparation for the spring offensive suggest that consumption rose to 1,200 tons per day from January until the mining began, when consumption

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Table 3

North Vietnam: Estimated Petroleum  
Supply and Consumption

	<i>Thousand Metric Tons</i>		
	1970	1971	1972 <sup>a</sup>
Stocks on hand, 1 January	109	100	110
Imports	375	406	390 <sup>b</sup>
Total supply	484	506	500
Less total consumption	384	396	410
Stocks on hand, 31 December	100	110	90 <sup>c</sup>

a. Rounded to the nearest 10,000 tons.

b. This figure excludes deliveries of Chinese petroleum after the initiation of the mining program and hence should be considered a minimum level.

c. Does not take into account stocks destroyed. There is no way to estimate such damage with any degree of confidence, but at no time during the bombing or mining were there signs that such destruction had reduced stocks to a point where serious shortages were being experienced in the economy.

dropped to an estimated 1,000 tons per day. Although formal nationwide restraints on consumption were not imposed in either the military or civilian sectors, there is evidence that the kerosene and gasoline ration in Hanoi was temporarily reduced, that low priority consumption was voluntarily curtailed, and that greater use was made of bullock carts. Consumption probably returned to about 1,100 tons per day after 1 August, when the pipeline to the PRC became operational.

12. Although no exact breakdown is available, requests and planned deliveries of imports indicate that the mix of products consumed and/or destroyed was approximately 50% gasoline, 40% diesel fuel, and 10% kerosene, lubes, and specialty products - compared with 34%, 53%, and 13%, respectively, in 1971. The shift from diesel fuel to gasoline reflects the greater use of gasoline-powered trucks after the use of water craft and railroads - large consumers of diesel fuel - was reduced by mining and bombing.

Pipelines (see the map)

13. Work continued steadily on the North Vietnamese pipeline system from January 1972 until mid-April. The two remaining segments to connect



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Hanoi and the Vinh area -- the previous northern terminus of the Panhandle pipeline system -- were completed by mid-April. Farther south, a 30-mile-long pipeline was constructed between 7 and 14 April from the Dong Hoi area to the Ben Hai River in the DMZ. The pipeline into Laos was extended to a point approximately 17 miles south of Muong Nong. The expansion of the Panhandle pipeline system facilitated movement of petroleum in support of North Vietnam's 1972 spring offensive. Only about 14 miles of a dual pipeline system from Bai Chai to Hanoi were laid during the first few months of 1972. By mid-April, 16 miles were needed to connect this pipeline with the north-south pipeline at Co Chou -- a storage area located 15 miles southeast of Hanoi.

14. After intensified bombing began in April and the port mining in May, pipeline construction accelerated. The more deliberate, permanent construction methods used on the Bai Chai pipeline were abandoned in favor of speed. By early May, 24 miles of pipeline were laid on top of the ground, and the line was completed from Bai Chai to Co Chou. This permitted petroleum to be piped directly from the Haiphong area to the Panhandle and thence to Laos or South Vietnam. By the time the east-west line was completed, however, the US mining program had closed Haiphong harbor. By early July the end of the north-south pipeline to the DMZ was extended to a point near Route 9, about 10 miles north of Quang Tri City in South Vietnam. Some time after 3 November, work was started on another new pipeline -- much of it dual -- between Ninh Binh and Cu Dai, a distance of approximately 80 miles, paralleling the existing pipeline. By late December, one of the two branches into Laos was extended to an area 66 miles south of Muong Nong.

15. The first signs of work on a new pipeline to connect the PRC and North Vietnam were detected [redacted]

[redacted] extending from the vicinity of Hai Duong northward for 30 miles, to a point near Kep, and from a petroleum storage area at P'ing-hsiang, PRC, south to the North Vietnamese border, a distance of about 7.5 miles. These two sections were connected by 1 July, and by 1 August the line was considered operational. Later, other lines were laid in association with the first, thereby permitting the simultaneous importation of the two main bulk petroleum products required by North Vietnam -- gasoline and diesel fuel. This pipeline system has a capacity in excess of 2,000 tons per day -- about twice North Vietnam's estimated demand for bulk products.

16. In mid-September the construction of another pipeline to the PRC became evident. By the end of the year, this line could have been operational, or nearly so. The line extends from Bai Chai along the northeast coast of North Vietnam into the PRC and probably terminates at a small port in south China.

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**Storage**

17. In early 1972 the North Vietnamese continued to reconstruct petroleum storage facilities that had been damaged or destroyed during the 1965-68 bombing and continued to expand dispersed storage facilities. Resumption of US bombing in mid-April halted reconstruction at principal storage sites and accelerated construction of dispersed storage. Reconstruction was limited to essential storage facilities and pumping stations linked to the nationwide pipeline system. On 1 January 1973, total storage capacity at principal terminals and in dispersed tanks was estimated at 102,000 tons.

***Principal Storage Terminals***

18. Table 4 shows the capacities of the principal petroleum storage terminals on 1 January 1966 - before petroleum storage facilities were targeted - and their capacities on 1 April 1972 and 1 January 1973. In early 1966 these terminals provided about 85% of North Vietnam's estimated petroleum storage capacity, whereas by 1973 they provided only about 15%.

Table 4

**North Vietnam: Location and Estimated Capacity of  
Principal Petroleum Storage Terminals**

<i>JCS Target Number</i>	<i>Name</i>	<i>Coordinates</i>		<i>Capacity (Metric Tons)</i>		
		<i>North</i>	<i>East</i>	<i>1 January 1966</i>	<i>1 April 1972</i>	<i>1 January 1973</i>
48	Haiphong	20 52	106 39	40,620	20,500	0
49	Hanoi	21 04	105 54	30,620	17,300	880
50	Vinh	18 40	105 43	1,350	5,500	2,640
51	Nguyen Khe	21 10	105 51	7,500	4,000	3,160
51.1	Ha Gia	21 16	105 50	9,910	4,500	4,000
51.11	Bac Giang	21 16	106 11	2,260	2,260	2,260
51.12	Nam Dinh	20 25	106 11	....	1,700	1,450
51.13	Do Son	20 42	106 47	2,860	....	....
51.14	Viet Tri	21 17	105 26	1,400	500	500
51.17	Duong Nham	21 01	106 30	4,130	1,300	1,300
<b>Total</b>				<b>100,650</b>	<b>57,560</b>	<b>16,190</b>

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*Dispersed Sites**Tanks*

19. At the beginning of 1972, North Vietnam had approximately 220 widely dispersed storage sites with a total capacity of 90,000 tons. These sites contain small horizontal tanks (7 to 21 tons per tank) in shallow excavations. Since the resumption of full-scale bombing in mid-April, an estimated 13,000 tons of capacity, or about 15% of the total, have been destroyed. Little effort was expended in restoring these damaged sites. Instead, new dispersed sites with a combined capacity of about 9,000 tons were constructed, primarily along the pipeline system. North Vietnam, therefore, now has an estimated 86,000 tons of dispersed storage capacity -- more than enough to permit the pipeline system to operate continuously.

*Other*

20. Small containers, principally 55-gallon drums, continued to be used extensively for petroleum storage and distribution, particularly at dispersed storage sites and at staging areas for supplies destined for Laos and South Vietnam. With the widespread bombing of storage sites and staging areas, there is no way to determine an accurate estimate of the drum storage capacity available in North Vietnam.

21. The "floating" storage capacity represented by barges, rail tank cars, and tank trucks in North Vietnam is sizable, but difficult to estimate. The operational pipeline system, another form of storage, also could hold a sizable amount of petroleum when filled.

*Prospects*

22. North Vietnam is completely dependent on petroleum imports -- the country has neither producing wells nor refineries -- and this will continue for at least several years. At the end of 1972, petroleum stocks were the lowest year-end level since 1967, all major ports were closed by mines, and the principal petroleum storage facilities were badly battered by US bombs. At the same time, however, the country's pipeline system has been expanded to such an extent that the country now enjoys enormous flexibility in distribution of petroleum products internally and to Laos and South Vietnam. As long as its allies are willing to supply sufficient petroleum, North Vietnam will be able to meet its petroleum demands. Soviet petroleum deliveries to the PRC for transshipment to North Vietnam continued at a high level in January 1973.

23. When North Vietnam's ports are reopened, seaborne deliveries of petroleum undoubtedly will resume, making dependence on foreign supplies

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less precarious by removing the need for cooperation between the two main allies. Construction now under way suggests that North Vietnam may eventually have a multiple pipeline system extending from both the PRC and the Haiphong port area into the Panhandle. When completed, this line will permit the separate, simultaneous delivery from either point of the two main bulk petroleum products required by North Vietnam. North Vietnam now faces the task of rebuilding the principal storage terminals. After the bombing halt in 1968, almost two years passed before a principal terminal was reconstructed. By the time the bombing program was resumed in April 1972, storage capacity at the principal terminals was about 60% of the 1966 level. Because of the proliferation of dispersed storage sites and the expanded pipeline system, it is possible that many of the former principal terminals will not be rebuilt in the near future.

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